

# Facts and future trends on the sheep, goat and cattle sector in Croatia

---

Dr. sc. Zdravko Barać

Croatian Agricultural Agency, Croatia

# Croatian Agricultural Agency

---

- Established in 1994 by the Government of the Republic of Croatia as a nonprofit state organisation
- Activities in livestock sector
- All data that we collect are used by Ministry of Agriculture for analysis and strategy as well as by the users of our services for the management of their farms

# Croatian Agricultural Agency

---

## ⇒ Main tasks

- Animal identification and registration,
- Animal farm register
  
- Quality control of agricultural products
  - Raw milk
  - Feedstuff
  - Honey



# Croatian Agricultural Agency

---

## ⇒ Main tasks

- Participate in the implementation for breeding programmes
- Production recording and genetic evaluation
- Protection of indigenous breeds of livestock – gene bank



# Croatian Agricultural Agency

---

- CAA is the member of ICAR – International Committee for Animal Recording
- ICAR Certificat of Quality: 2009, 2013





# Sheep sector



## Introduction –

# The importance of sheep production in the Croatian livestock

---

- The sheep rearing has a long history in Croatia
- The number of sheep and their economic importance have been significantly changed at last 60 years
- The total number of sheep was declined in last 50-60 years
- The development of industry and tourism in last 50-60 years resulting in the significant decline in the number of sheep.
- The total number of sheep, economic importance of sheep and breed structure and production goals have changed adapting to the market requirements.



## Introduction –

# The importance of sheep production in the Croatian livestock

---

- Most of the sheep in Croatia are keeping for **meat production**, primarily lamb.
- A small number of sheep (about 7% or about 60,000 ewes) is rearing for **milk production**, and the milk is processed into cheese in the small family cheese factories or in industrial dairies.
- Wool production has not any economic significance, because only a small portion processed by the domestic textile industry, part of the raw wool is exported, unfortunately most of the wool ends as waste.





# Sheep production systems in Croatia

- 2 main systems
  1. In continental part of Croatia (middle and northern part)
  2. In Mediterranean part of Croatia (southern part)

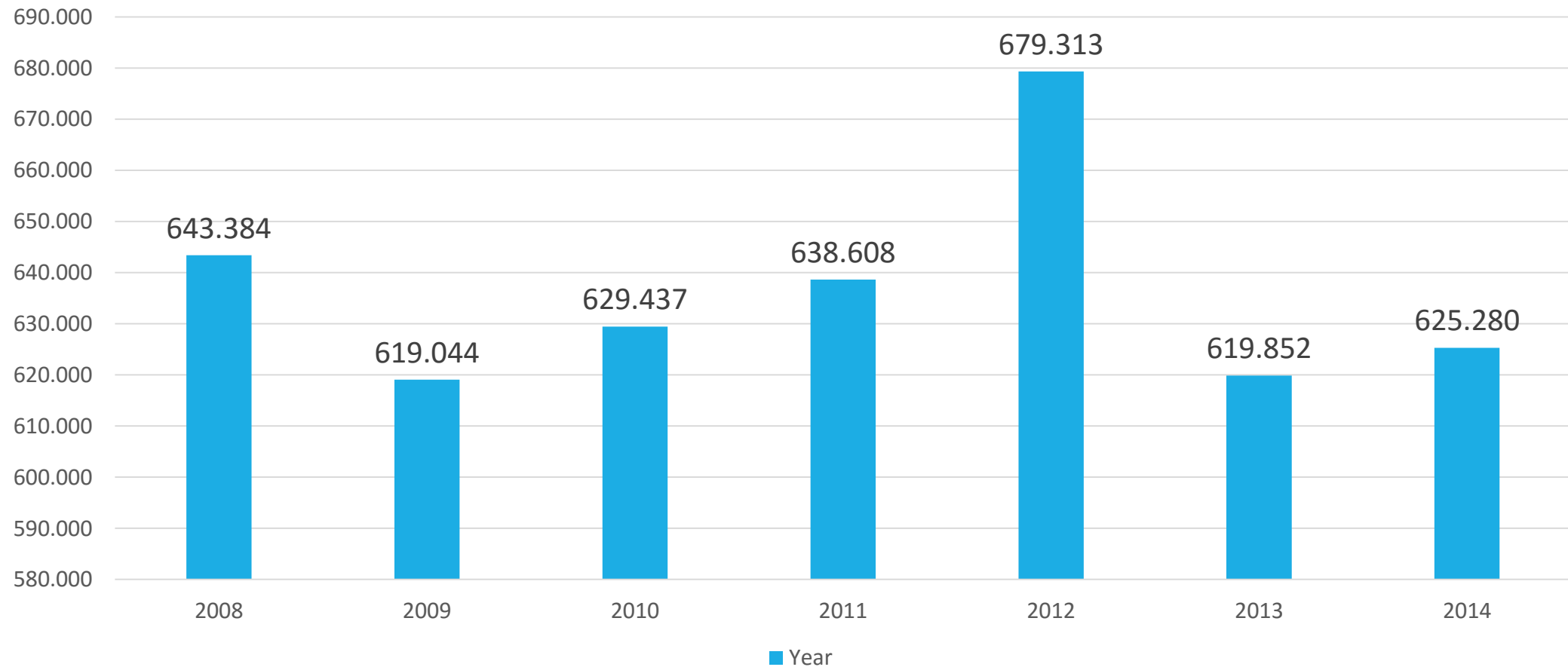


# Sheep production systems in Croatia

- 2 main systems
  1. In continental part of Croatia (middle and northern part)
  2. In Mediterranean part of Croatia (southern part)
    1. Large sized breeds, imported breeds for meat production, intensive feeding systems, grasslands of good quality, grains
    2. Indigenous breeds, smaller sized breeds, extensive pasture systems - areas where are not good conditions for rearing cattles and crop production organization. Milk production is more important than in north part of Croatia.



# The total sheep population size (ewes and rams)



# The total sheep population size

## AUGUST 2015:

- The total population size: 625.280 heads
- The total number of farms: 17.000
- The average size of herd: 81% less than 50 animals
- In 7% of herds more than 100 animals





# Sheep breeds in Croatia

---

- In total - 16 breeds
- 9 indigenous breeds + 7 imported breeds (Croatian breeding)
- Various crossbreeds of local, indigenous populations with imported breeds
- The protection of the indigenous breeds is at the same time protection the national cultural heritage
- Products (meat, cheese) originating from indigenous breeds achieved much better price in the market.



Sheep breeds in Croatia

# Istrian sheep

- Croatian indigenous breed from Istria peninsula
- The total population size -2.300 heads
- Endangered breed
- Dual purpose breed
- It is primarily rear for milk production –the best results in milk production production

## Body measurements and production characteristics of Istrian sheep

Traits	Ewes	Rams
Body weight of adult animals (kg)	60 - 70	80 - 100
Fertility (%)	130 - 150	
Milk production (L)	220 - 350	
Body weight of lambs with 45 - 60 days (kg)	18 - 22	
Wool (kg)	1,5 - 2,0	2,5 - 3,5



Sheep breeds in Croatia

# Krk sheep

- Croatian indigenous breed originated on Krk island
- The total population size - 20.000 heads
- It is primarily rear for meat production - *Krk lamb*;
- Small part of population, about 2.000 heads use for milk production – *Krk cheese*.



## Body measurements and production characteristics of Krk sheep

Traits	Ewes	Rams
Body weight of adult animals (kg)	30 - 40	35 - 45
Fertility (%)	120 - 140	
Milk production (L)	100 - 150	
Body weight of lambs with 45 - 60 days (kg)	12 - 15	
Wool (kg)	1,0 - 1,5	2,0 - 3,0



# Sheep breeds in Croatia

## Cres sheep

- Croatian indigenous breed from Cres island
- The total population size - 25.000 heads
- Main production goal of Cres farmers is meat production – on Croatian market appreciated *Lamb from Cres island*
- About 2.000 ewes in milk production



Body measurements and production characteristics of Cres sheep		
Traits	Ewes	Rams
Body weight of adult animals (kg)	35 - 45	42 - 50
Fertility (%)	120 - 140	
Milk production (L)	80 - 120	
Body weight of lambs with 45 - 60 days (kg)	15 - 18	
Wool (kg)	1,0 - 1,5	2,0 - 3,0





Sheep breeds in Croatia

# Rab sheep

- Croatian indigenous sheep breed from Rab island
- The total population size - 8.000 heads
- Meat production



Body measurements and production characteristics of Rab sheep		
Traits	Ewes	Rams
Body weight of adult animals (kg)	35 - 45	40 - 50
Fertility (%)	120 - 140	
Milk production (L)	100 - 120	
Body weight of lambs with 45 - 60 days (kg)	15 - 18	
Wool (kg)	1,2 - 2,0	2,0 - 3,0

Sheep breeds in Croatia

# Pag sheep

- Pag sheep is the indigenous breed from Pag island
- The total population size - 35.000 heads
- It is primarily rear for milk production - *Pag cheese* most popular sheep milk cheese in Croatia
- The largest indigenous sheep population for milk production
- *Pag lamb* is also well known and highly appreciated product in Croatian market - protected designation of origin (PDO)



## Body measurements and production characteristics of Pag sheep

Traits	Ewes	Rams
Body weight of adult animals (kg)	35 - 45	40 - 50
Fertility (%)	120 - 140	
Milk production (L)	120 - 250	
Body weight of lambs with 45 - 60 days (kg)	12 - 15	
Wool (kg)	1,2 - 2,0	2,0 - 3,0



Sheep breeds in Croatia

# Dalmatian pramenka

- Croatian largest indigenous sheep population
- The total population size – 280.000 heads
- The breeding area is the whole Dalmatia - coastline and some islands
- The primary production goal is the production of meat – lamb;
- A small number of animals is used in the production of milk (about 5,000 rearing ewes).



Body measurements and production characteristics of Dalmatian pramenka		
Traits	Ewes	Rams
Body weight of adult animals (kg)	35 - 45	45 - 55
Fertility (%)	120 - 140	
Milk production (L)	100 - 120	
Body weight of lambs with 45 - 60 days (kg)	15 - 17	
Wool (kg)	1,2 - 2,0	2,0 - 3,0

Sheep breeds in Croatia

# Dubrovnik sheep

- Dubrovnik sheep is indigenous breed from Dubrovnik county
- Total size of population – 712 heads
- Croatian most endangered indigenous sheep breed
- Meat production



Body measurements and production characteristics of Dubrovnik sheep		
Traits	Ewes	Rams
Body weight of adult animals (kg)	45 - 50	50 - 55
Fertility (%)	120 - 140	
Milk production (L)	110 - 130	
Body weight of lambs with 45 - 60 days (kg)	15 - 18	
Wool (kg)	1,0 - 2,0	2,0 - 3,0



Sheep breeds in Croatia

# Lička pramenka

- Lička pramenka is the Croatian indigenous sheep breed from Lika county
- The total population size - 50.000 heads
- It is reared exclusively for meat production



## Body measurements and production characteristics of Lička pramenka

Traits	Ewes	Rams
Body weight of adult animals (kg)	45 - 55	65 - 75
Fertility (%)	120 - 150	
Milk production (L)	120 - 180	
Body weight of lambs with 45 - 60 days (kg)	25 - 30	
Wool (kg)	1,5 - 2,5	2,5 - 3,5



Sheep breeds in Croatia

# Tsigai sheep

- Tsigai is Croatian indigenous breed that are rearing in region Slavonia and Baranja
- The total population size is 3.000 heads
- It is rearing exclusively for meat production



Body measurements and production characteristics of Tsigai sheep		
Traits	Ewes	Rams
Body weight of adult animals (kg)	60 - 70	78 - 90
Fertility (%)	140 - 180	
Milk production (L)	150 - 200	
Body weight of lambs with 45 - 60 days (kg)	30 - 35	
Wool (kg)	3,5 - 4,5	5,0 - 6,0





## Sheep breeds in Croatia

# Merinolandschaf

- Merinolandschaf is the most common foreign breed in sheep breeding in Croatia
- It is estimated that in Croatia in the breeding is about 5.000 purebred Merinolandschaf sheep and more different crossbreeds
- For years in the continental Croatian farmers used this breed for improving meat and wool traits
- Today, it is rearing exclusively for meat production in the continental parts of the Croatia



### Body measurements and production characteristics of Merinolandshaf

Traits	Ewes	Rams
Body weight of adult animals (kg)	70 - 85	120 - 140
Fertility (%)	150 - 180	
Milk production (L)	150 - 200	
Body weight of lambs with 45 - 60 days (kg)	30 - 35	
Wool (kg)	4,0-5,0	6,0-7,0

Sheep breeds in Croatia

# East Friesian sheep

- One of the best sheep breeds in terms of milk yield per ewe,
- In Croatia is represented by about 800 purebred head and about 4.000 crossbreeds with different amounts of blood of this breed.
- In continental part of Croatia



## Body measurements and production characteristics of east Friesian sheep

Traits	Ewes	Rams
Body weight of adult animals (kg)	60 - 75	90 - 110
Fertility (%)	180 - 250	
Milk production (L)	250 - 400	
Body weight of lambs with 45 - 60 days (kg)	35 - 40	
Wool (kg)	4,0 - 4,5	4,0 - 6,0



Sheep breeds in Croatia

# Travnička sheep

- Travnička sheep originated in Bosnia,
- In Croatia during last 25 years,
- The total population size – 5.000 heads mainly in Slavonia and Lika regions,
- Dual purpose breed - meat and milk production



## Body measurements and production characteristics of Travnička pramenka sheep

Traits	Ewes	Rams
Body weight of adult animals (kg)	70 - 75	82 - 90
Fertility (%)	120 - 150	
Milk production (L)	130 - 180	
Body weight of lambs with 45 - 60 days (kg)	15 - 18	
Wool (kg)	2,5 - 3,0	3,5 - 4,5

Sheep breeds in Croatia

# Solčavsko Jezerska sheep

- Solčavsko jezerska sheep originated in Slovenia
- In Croatia this breed is represented by approximately 3.000 heads and big number crossbreeds
- It is rearing primarily for meat production



Body measurements and production characteristics of Solčavsko Jezerska sheep		
Traits	Ewes	Rams
Body weight of adult animals (kg)	70 - 80	80 - 100
Fertility (%)	150 - 180	
Milk production (L)	100 - 150	
Body weight of lambs with 45 - 60 days (kg)	30 - 35	
Wool (kg)	2,5 - 3,0	3,5 - 4,5



# Sheep breeds in Croatia

---

- In a small number (about 1.000 heads each) are represented breeds Suffolk, Ile de France and Romanovska as well as crossbreeds with different amounts of blood these breeds.



# Lamb production

---

- Lambs for slughtering - most important product of most farmers
- We have not precise data on total lamb meat production
- Estimation of total production based on:
  - The annual average number of breeding sheep
  - Average index lambing
  - The average litter size
  - Annual mortality of lambs
  - The annual percentage of replacement in herd
  - The average slaughter weight
- Estimated annual production of lamb is around **7.650 tonnes**





# Sheep milk production

- Of the total sheep population in Croatia in the production of sheep's milk used around 7% (around 50,000 breeding ewes).
- The market recognized the need for increasing the production and that the Croatian market is extremely appreciated by our most original full-fat hard cheeses (Pag, Krk, Cres, Istrian ...).
- Milk production is mainly occurring on islands, peninsula Istria
- Milk production in these areas is based on the Croatian indigenous breeds of sheep.



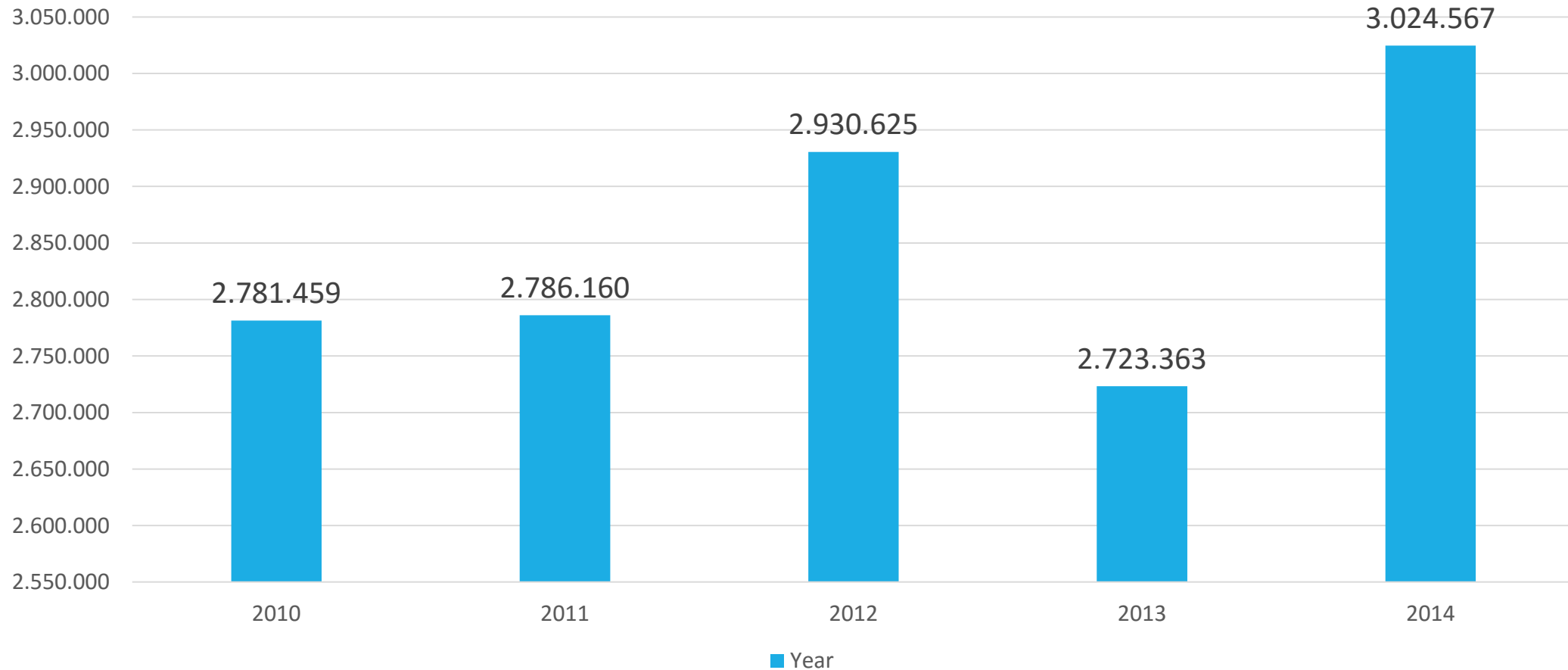
# Sheep milk production

- On the other side, in continental part of Croatia, sheep milk production is based by imported breeds: East Friesian and Travnička sheep.
- Produced milk is sold in large industrial dairy or processed in small family dairies within the farm.



# Sheep milk production

- With the amount of milk which buy industrial cheese factories on family dairies is usually processed about 1 million liters of milk, and the estimated total annual sheep milk production in Croatia is about 4 million liters.





# Goat sector





## Introduction –

# The importance of goat production in the Croatian livestock

---

- There is a long history of goats breeding in Croatian.
- Number of goats and their economic importance in the overall economy throughout history quite changed.
- Previously, especially in certain areas, goat farming had a very great importance, especially in Dalmatia, the Dalmatian hinterland, coast and islands where are weaker conditions for rearing other types of livestock, especially cattles.



## Introduction –

# The importance of goat production in the Croatian livestock

---

- The most part of Croatian goat population is rearing especially for **meat production**
- In the production of goat's meat mostly used our indigenous breeds (Croatian multicolored goat and Croatian white goat), then different crossbreeds and recently Boer Goat (there are a few small herds)
- About 14,000 goats (20%) is rearing for **milk production** – Alpine goat population is dominated in milk production



# Goat production systems in Croatia

- 2 main systems
  1. In continental part of Croatia (middle and northern part)
  2. In Mediterranean part of Croatia (southern part)





# Goat production systems in Croatia

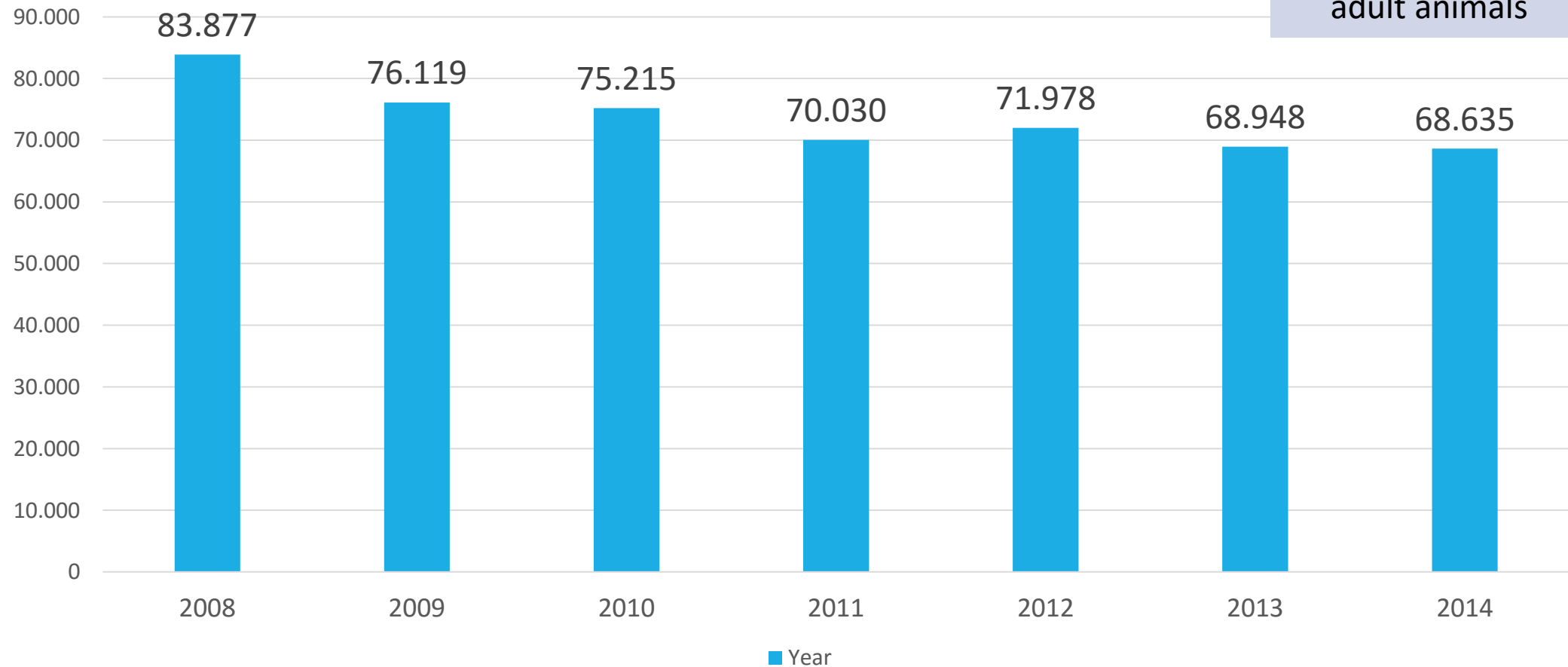
---

- 2 main systems
  1. In continental part of Croatia (middle and northern part)
  2. In Mediterranean part of Croatia (southern part)
    1. Imported breeds for milk production, intensive feeding systems, use grasslands, grain
    2. Indigenous breeds, smaller sized breeds, extensive pasture systems - areas where are not good conditions for rearing cattle and crop production organization. Meat production is more important than in northern part of Croatia.



# The total goat population size

- In last 10 years the total number was decreasing
- Aproximately 70.000 adult animals



# The total goat population size

## AUGUST 2015:

- The total population size: 74.579
- The total number of farms: 4.000
- Average size of herd: 90% less than 50 adult animals
- In 4% of herds more than 100 adult animals
- Additional income for farmers





# Goat breeds in Croatia

---

- In total - **6 breeds**
- **3 indigenous breed**
  - Croatian multicolored goat
  - Croatian white goat
  - Istrian goat
- **3 imported breeds**
  - Alpine
  - Sannen
  - Boer goat



Goat breeds in Croatia

# Croatian multicolored goat

- Croatian indigenous breed is rearing in the south regions of Croatia
- The total population size – 25.000 heads
- The largest goat population in Croatia
- It is primarily rearing for meat – kid's meat.



## Body measurements and production characteristics of Croatian multicolored goat

Traits	Goats	Bucks
Body weight (kg)	45 - 55	50 - 65
Fertility (%)	125 - 150	
Milk production (L)	150 - 250	
Bod weight of kids in age 4 - 6 months(kg)	20 - 30	





Goat breeds in Croatia

# Croatian white goat

- Croatian indigenous breed that is rearing in the south regions of Croatia
- The total population size - 5.000 heads
- It is primarily rearing for meat - kid's meat.
- It is rearing also for milk production.



Body measurements and production characteristics of Croatian white goat		
Traits	Goats	Bucks
Body weight (kg)	40 - 50	55 - 65
Fertility (%)	150	
Milk production (L)	300 - 350	
Bod weight of kids in age 4 - 6 months(kg)	20 - 30	





Goat breeds in Croatia

# Istrian goat

- Croatian indigenous breed from Istria peninsula
- The total population size – 100 heads
- Protection and revitalization program
- Kid's meat production



Body measurements and production characteristics of Istrian goat		
Traits	Goats	Bucks
Body weight (kg)	55 - 80	70 - 120
Fertility (%)	150	
Milk production (L)	300 - 400	
Bod weight of kids in age 4 - 6 months (kg)	20 - 30	



Goat breeds in Croatia

# Alpine goat

- Imported from France, then also from Switzerland
- The population size of purebred animals - 13.000 heads
- This is the main dairy goat population in Croatia



Body measurements and production characteristics of Alpine goat		
Traits	Goats	Bucks
Body weight (kg)	60 - 80	80 - 100
Fertility (%)	170 - 190	
Milk production (L)	700 - 900	
Bod weight of kids in age 4 - 6 months (kg)	14 - 18	





Goat breeds in Croatia

# Sannen goat

- Imported from France, then also from Switzerland
- The population size of purebred animals- 2.000 heads
- Northwestern Croatia.



Body measurements and production characteristics of Alpine goat		
Traits	Goats	Bucks
Body weight (kg)	55 - 70	75 - 90
Fertility (%)	180 - 200	
Milk production (L)	800 - 1.000	
Bod weight of kids in age 4 - 6 months (kg)	12 - 16	





Goat breeds in Croatia

# Boer goat

- Boer goat originated from South Africa
- Small population in Croatia – 500 heads
- Boer goats used for breeding in pure blood, and for different crossing, primarily with indigenous breeds, Croatian colored goat and Croatian white goat for improving meat traits

## Body measurements and production characteristics of Boer goat

Traits	Goats	Bucks
Body weight (kg)	60 - 75	80 - 90
Fertility (%)	200 - 220	
Milk production (L)	200 - 250	
Bod weight of kids in age 4 - 6 months (kg)	25 -32	



# Kid's meat production

---

- Kids for slughtering - most important product of most farmers
- We have not precise data on total kid's meat production
- Estimation of total production based on:
  - The annual number of rearing goats
  - Average index of kidding
  - The average litter size
  - Annual mortality of kids
  - The annual percentage of replacement in herd
  - The average slaughter weight
- Estimated annual production of kid's meat is around **960 tonnes**



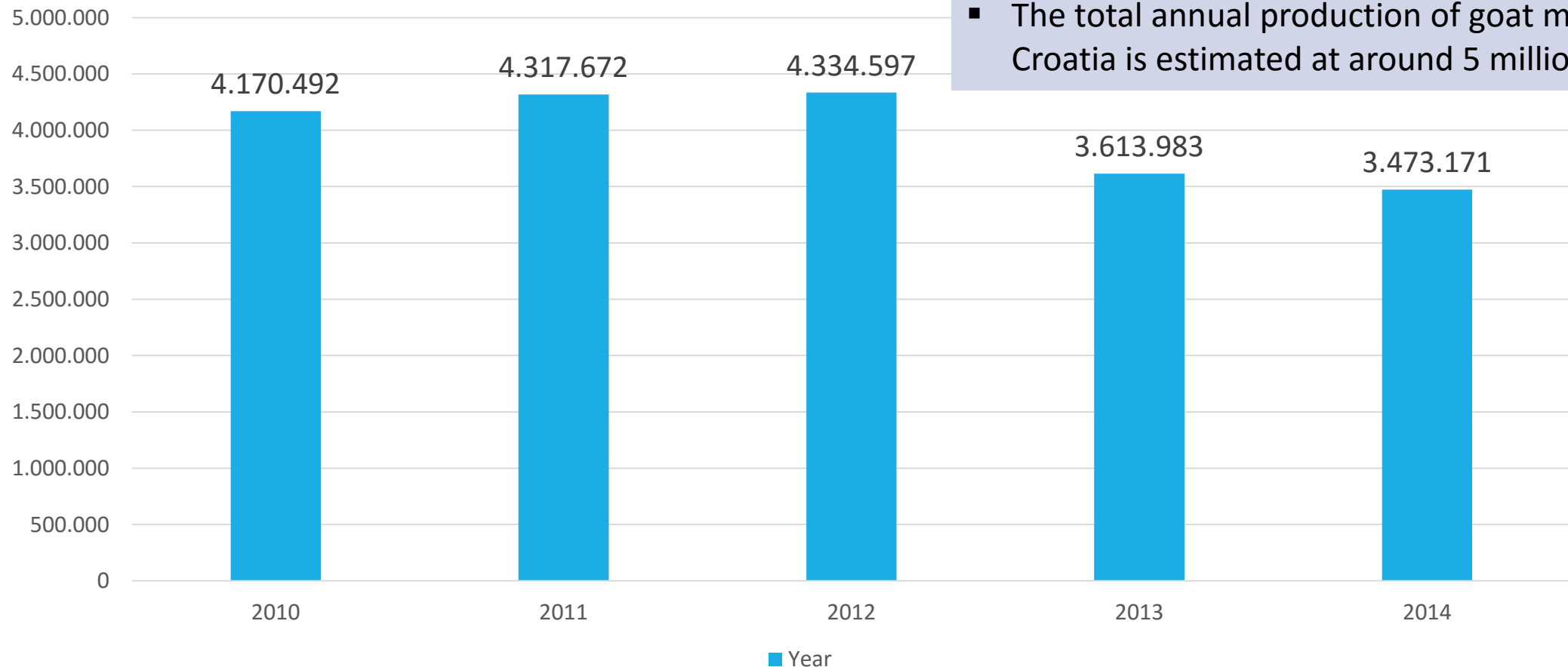
# Goat milk production

- Production of goat milk is mostly represented in the northwestern and northern part of the Croatia
- Based on imported dairy breeds
- In this area is well organized purchase goat milk (Vindija),
- Produced milk is sold in large industrial dairy or processed in small family dairies within the farm.





# Goat milk production



- In estimating the total production of goat's milk in the Republic of Croatia should take into account that a certain amount of goat's milk are processed directly on family farms to where it is produced, approximately 1,000,000 liters of milk
- The total annual production of goat milk in Croatia is estimated at around 5 million liters

# Future prospects in the Croatian sheep and goat sectors

---

- Croatia need development of sheep and goat sector and for increasing sheep and goat products
- Especially in those areas where are bad conditions for rearing larger livestock and crop production organization.
- On these areas it is necessary to increase the number of sheep not only for economic but also environmental reasons (fire prevention)
- Production covers only 50% demands on lamb in Croatia
- Demands on local sheep and goat types of cheeses are steadily increasing



# Future prospects in the Croatian **sheep and goat** sectors

---

- For future development of sheep and goat sector, the most important measures are:
  1. Use of funds that are available to farmers within the Program of rural development (EFRD)
  2. Increasing production on existing sheep and goats farms and construction new sheep and goat farms
  3. Attract younger, well educated people for this production
  4. Encourage forming producer organisations
  5. Protection of local products by quality designations (marks of quality)



# Cattle sector



# Cattle production

---

- It is evident that the production of milk and meat in Croatia in recent years in decline.
  - The decline in milk price,
  - Increase in the price of animal feed,
  - The lag in technological and management aspects.



# Size of the cattle population

---

## **AUGUST 2015:**

- Total size of population: 462.254
- Total number of cows: 175.731
- Total number shepherds: 33.326



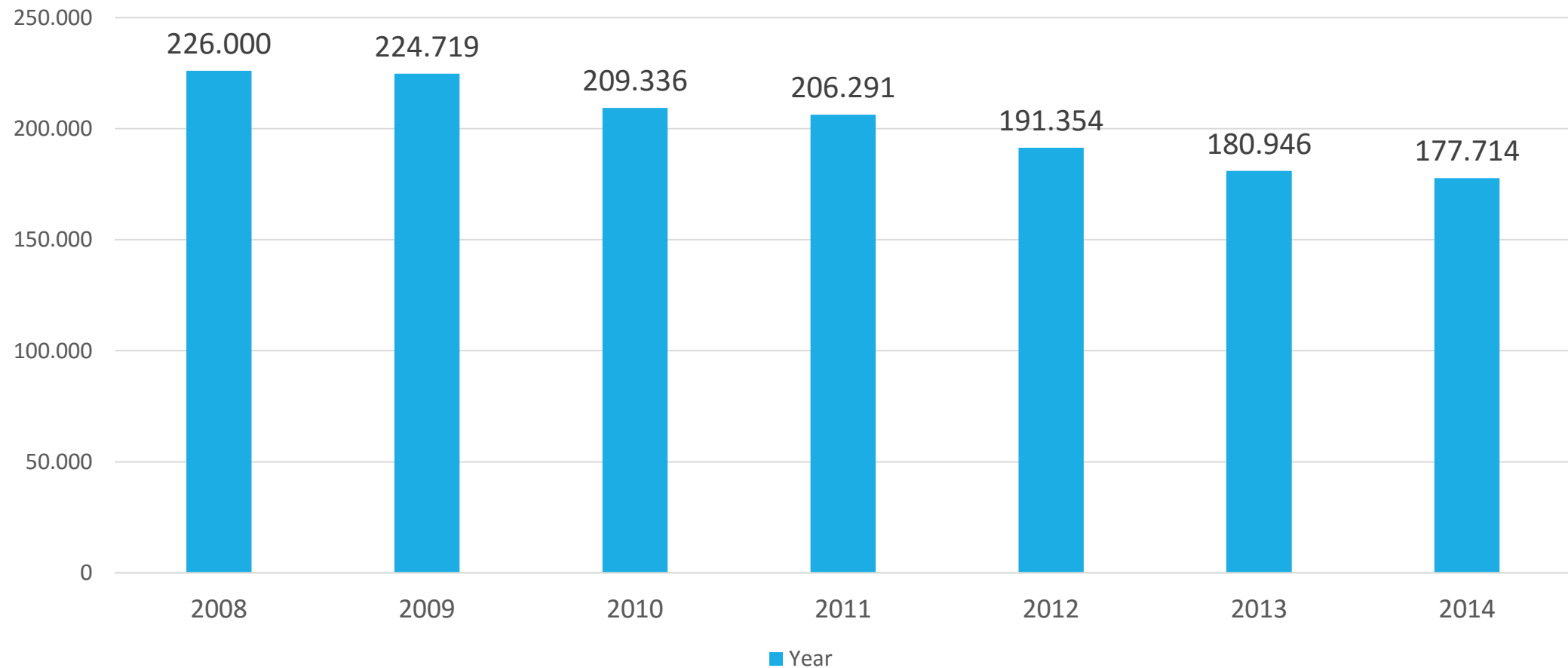


# Cattle production in Mediterranean part of Croatia

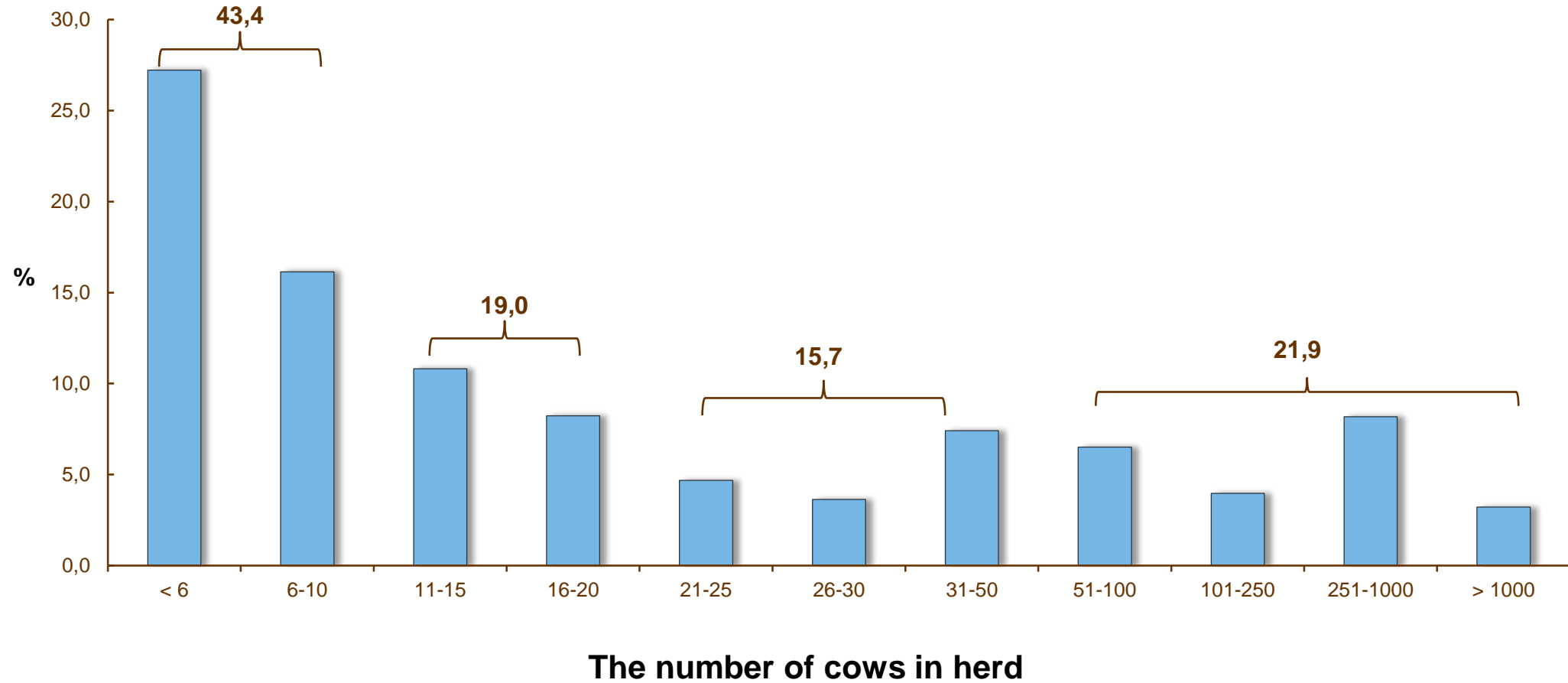
- Small farms with few heads
- Extensive feeding systems
- Purchase system of milk is not well developed



# The total number of cows in Croatia

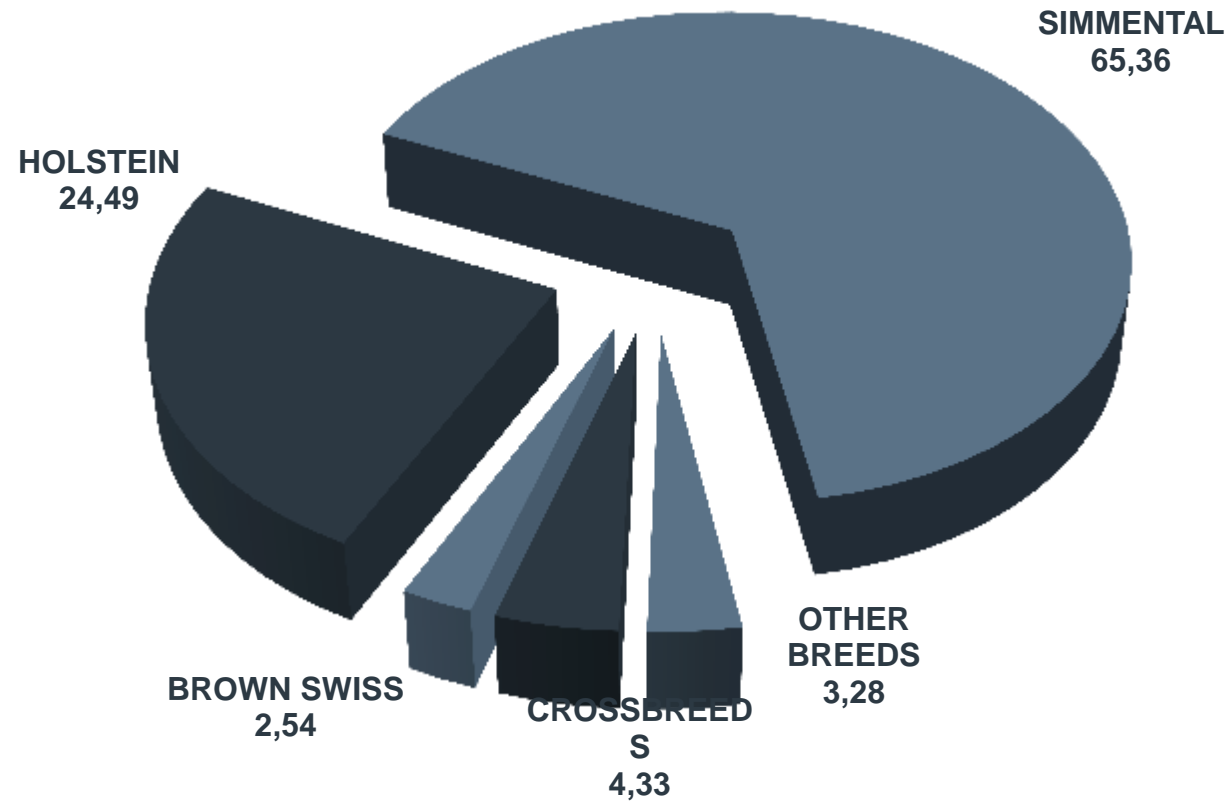


# Herds structure by number of cows





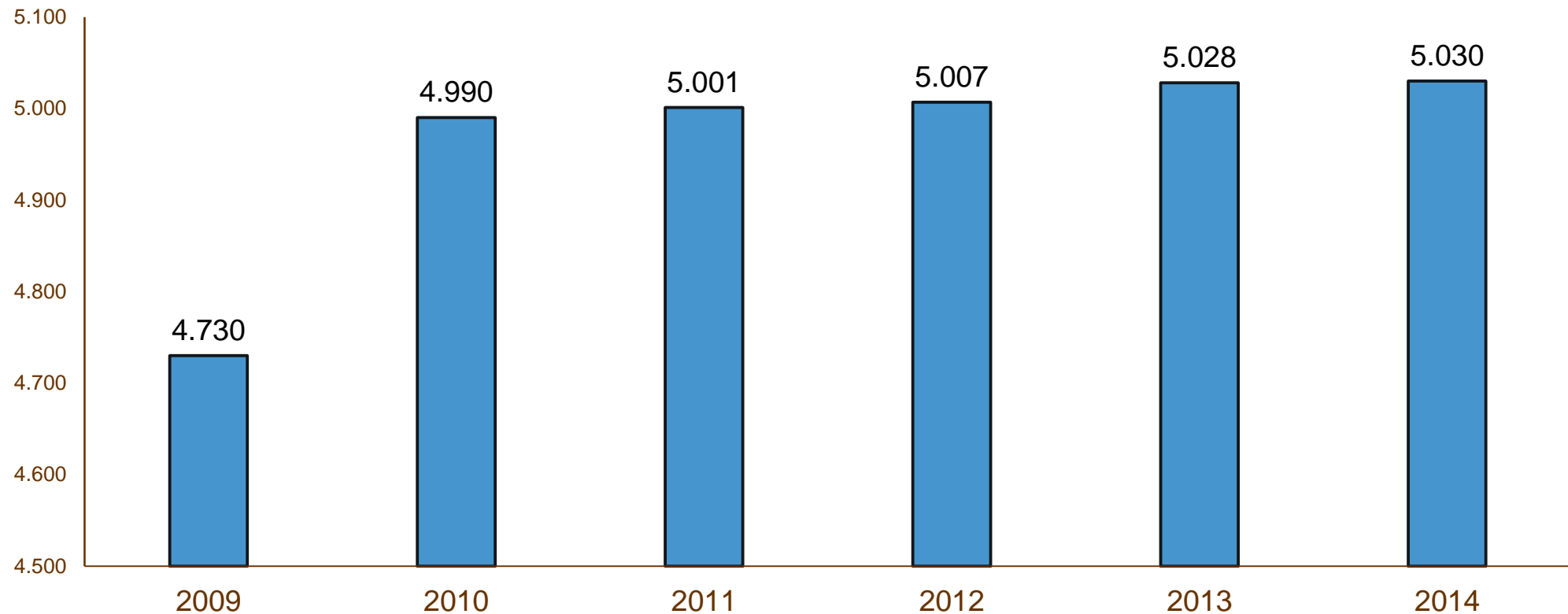
# Cattle breeds in Croatia





# Average milk production (kg) - Simmental

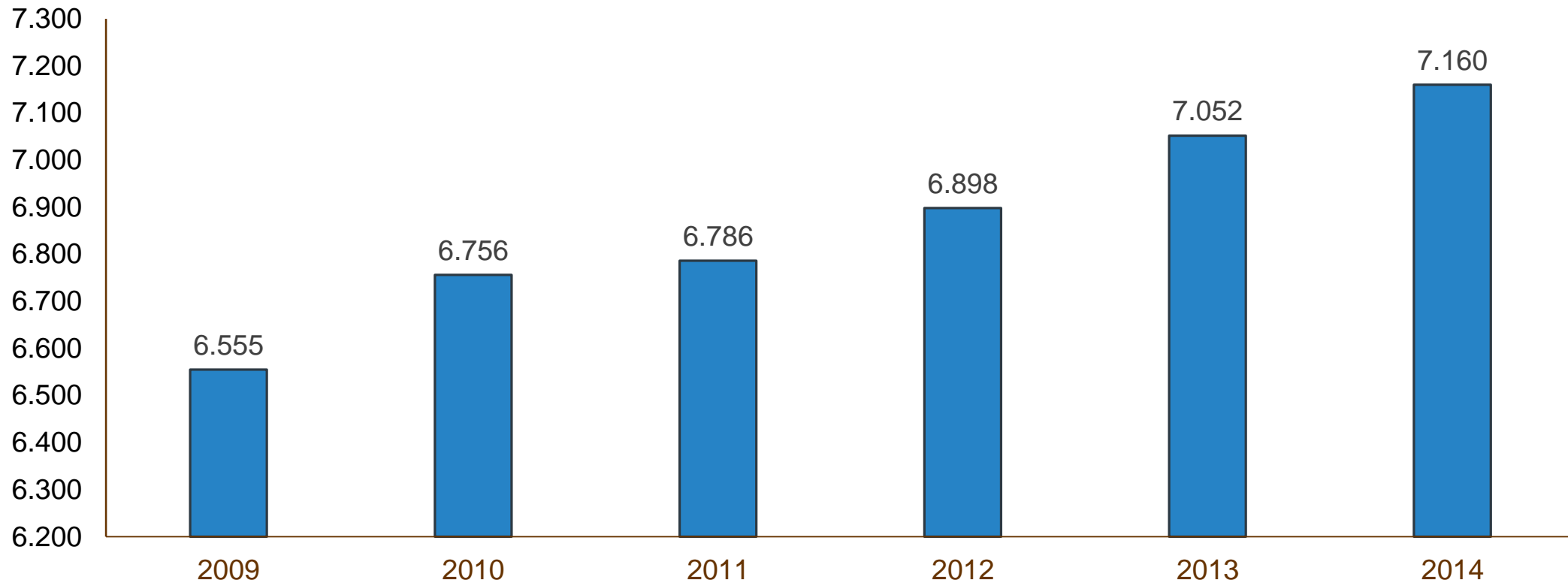
Standard lactation - 305 days





# Average milk production (kg) - Holstein

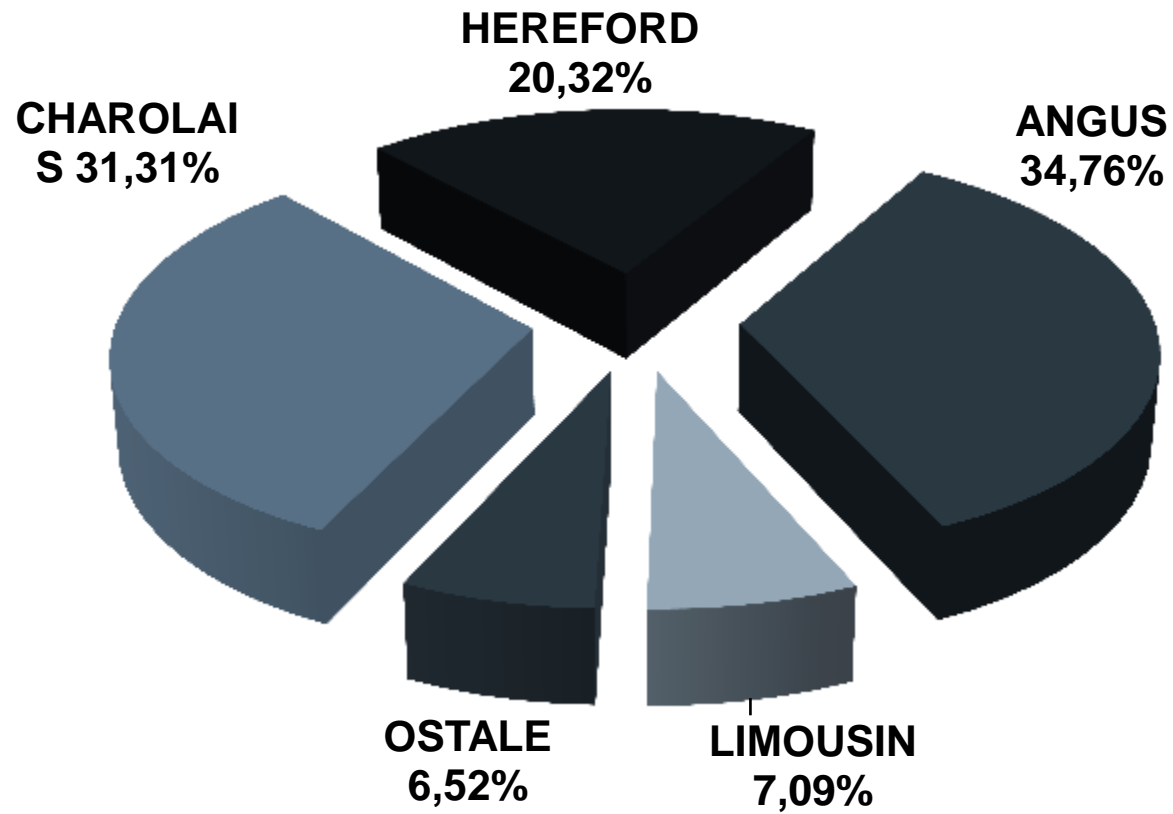
---





# Beef breeds

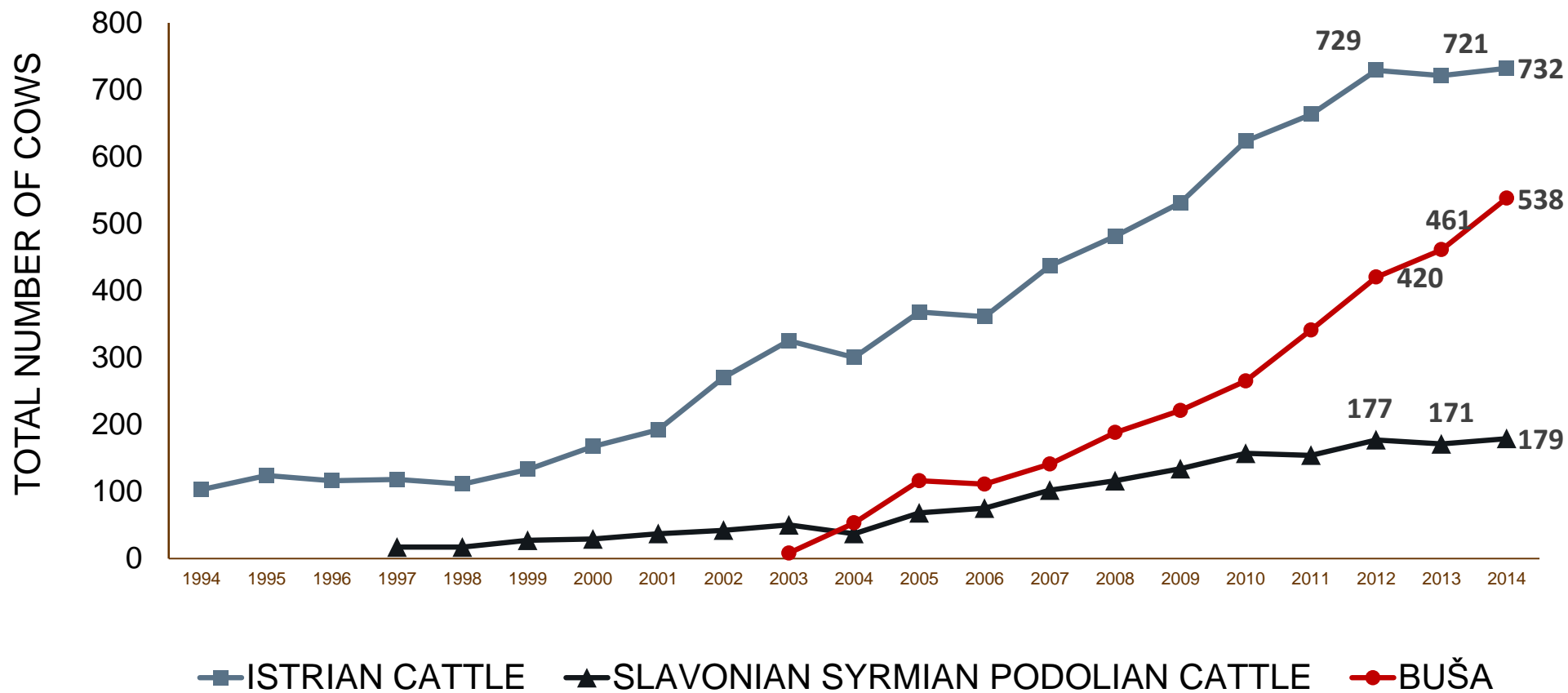
▪ Total number of cows - 4.367



- Purebred animals
- For crossing for improvement meat traits

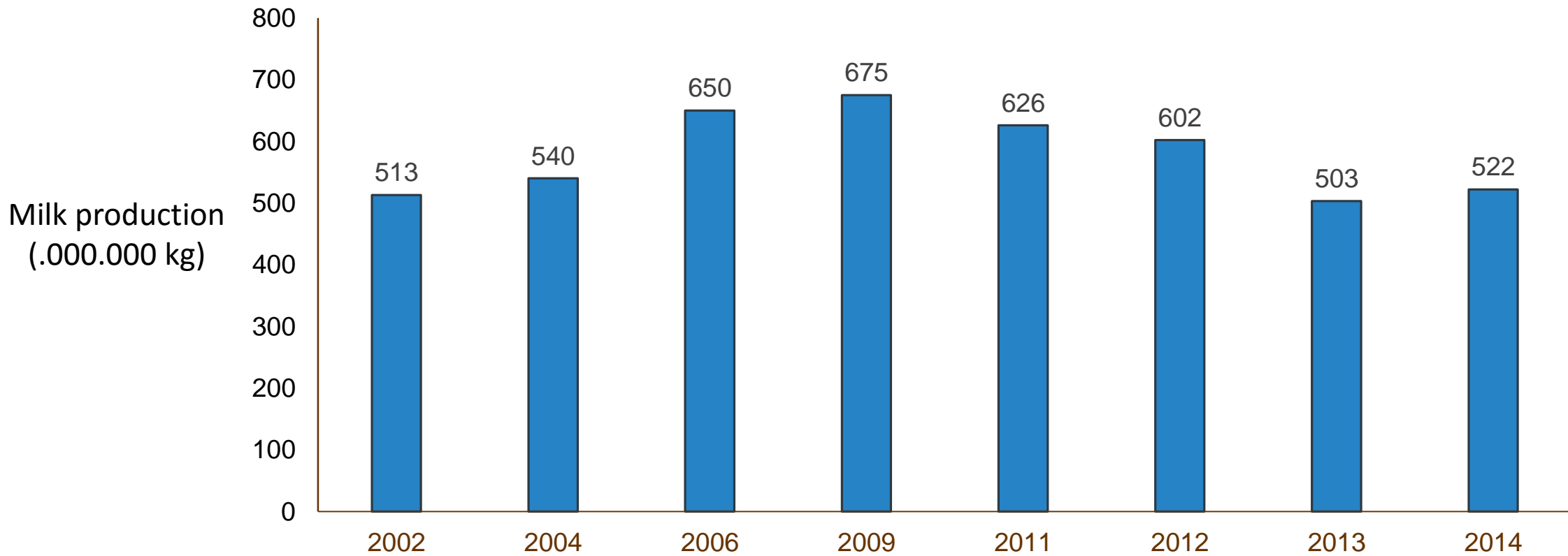


# Indigenous cattle breed



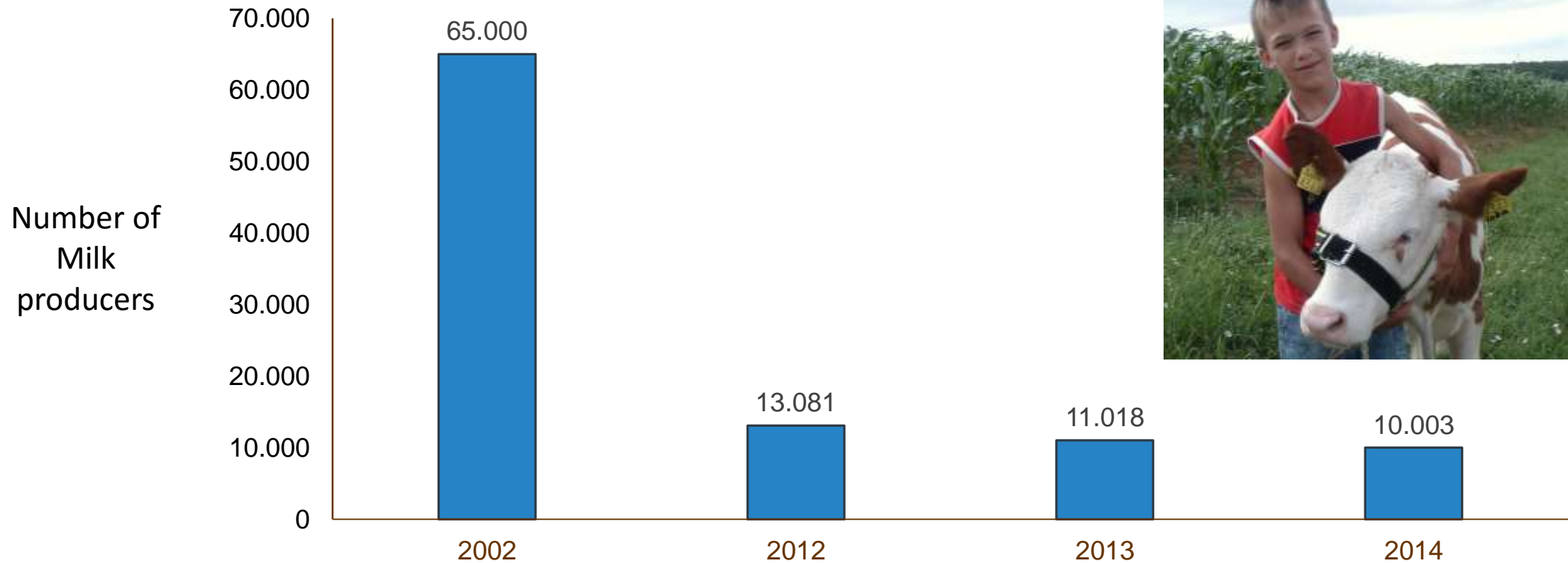
# Total milk production in Croatia

---



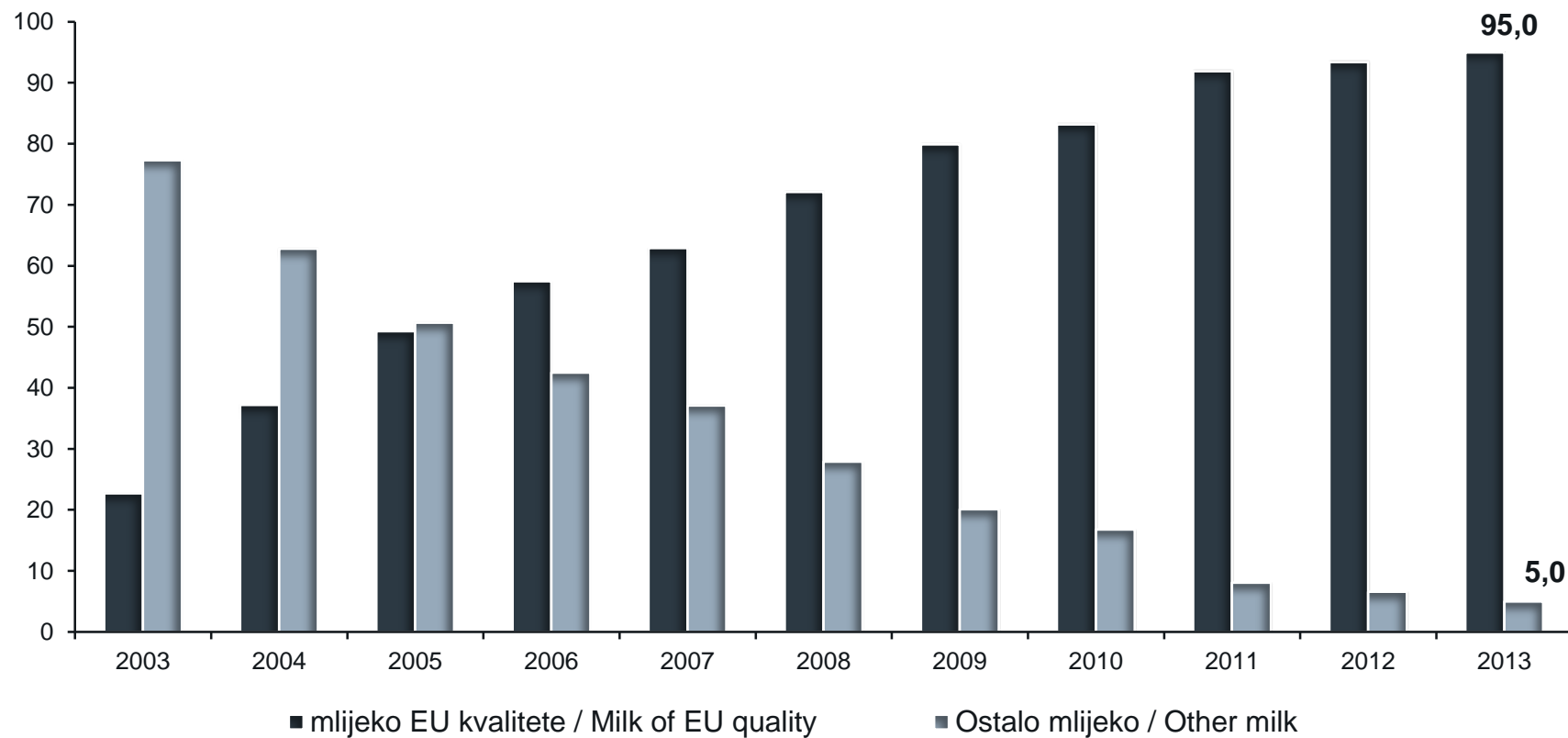


# The number of milk producers in Croatia



# Row milk quality

---



In 2014:  
96,1%

# Future prospects in the Croatian **cattle** sector

---

- Embargo to Russia will strongly affect the dairy sector in Croatia
- For future development of cattle sector, the most important measures are:
  1. Use of funds that are available to farmers within the Program of rural development (EFRD)
  2. Increasing production on existing farms and construction new farms
  3. Attract younger, well educated people for this production
  4. Encourage forming producer organisations
  5. Protection of local products by quality designations (marks of quality)





**THANK YOU VERY MUCH  
FOR YOUR ATTENTION!**